HOW TO

How to Distinguish Oak LEAFTIERS From LEAFROLLERS

USDA United States Department of Agriculture | *Prepared by* Forest Service | Northeastern Area State & Private Forestry

NA-FR-16

Introduction

Oak leaftiers and oak leafrollers defoliate oaks throughout the northeastern United States and adjoining Canadian provinces.

In recent years, scattered but severe outbreaks of oak Leaftier have occurred in Connecticut, Massachusetts, New Jersey, New York, Pennsylvania, and West Virginia. In 1978 more than 100,000 acres were defoliated in these states. Outbreaks of the oak leafroller complex have been reported in Michigan, Pennsylvania, and West Virginia.

Figure 1. Oak trees defoliated by oak leaftier.

Two or more years of moderate to severe defoliation by tiers and rollers usually results in twig and branch dieback, loss of diameter growth, and tree decline (Figure 1). Tree mortality has occurred in many areas. Trees with half of the twigs and branches dead are often subsequently attacked by wood borers. especially the twolined chestnut borer, *Agrilus bilineatus* (Weber), and the shoestring root fungus, *Armillariella mellea* Vahl. ex Fr.

What are Leaftiers and Leafrollers?

Although oak leaftiers and leafrollers resemble each other in the larval stages, the two insects differ in the way they web leaves and in larval characteristics.

Figure 2. A leaf rolled by a leafroller.

Leaf webbing habits

The leaftier larva (caterpillar) binds two or more leaves together with strands of silk and then feeds and rests between them. The larva is found by separating the tied leaves (cover photo). After feeding ceases, the larva drops to the ground and pupates in the litter or duff. The leaftiers of oak include a small group of tortricid moths and three other minor families

The leafroller larva rolls or folds one leaf, then binds it with strands of silk. It feeds and rests within the rolled or folded leaf (Figure 2). The larva is found by unrolling the partially folded leaf. Although some larvae may pupate in folded leaves, most pupate on the ground. The leafrollers of oak are comprised of more than 15 species of moths in 5 families. Of these, about 60 percent are tortricid moths.

Larval characteristics

Oak Leaftiers

Head: Both, dark area around the eye and a broad dark brown to black bar on side of head always present Figure 3).

Prothorax (front of thorax): Legs dark brown to black. (Figure 3)

Oak Leafrollers

Head: Either dark area around the eye or broad dark bar on side of head, or neither present; never both. (Figure 4)

Prothorax (front of thorax): Legs not dark brown to black. (Figure 4)

Figure 3. Head and portion of body of oak leaftier larva, *Croesia semipurpurana* (Kearfott). Dark area around the eye and a broad dark brown to black bar on side of head; legs dark. (Magnification 150X).

Figure 4. Head and portion of last larval instar of oak leafroller, *Archips semiferanus* (Walker). Either dark area around the eye or broad dark bar on side of head, or neither present; legs not dark. (Other larval instars of this species have black heads and prothoracic shields.) (Magnification 150X)

Important leaftiers and leafrollers on oak

An important oak leaftier is *Croesia semipurpurana* (Kearfott). The larva of *C. semipurpurana* is an early defoliator of northern red oak, black oak, pin oak, scarlet oak, and scrub oak (Figure 5). It feeds on unopened buds and developing foliage in early spring, resulting in severe stress on food reserves. Rarely are chestnut and white oak attacked.

The most important oak leafroller is *Archips semiferanus* (Walker) (Figure 6). Other leafrollers of oak such as *A. argyrosplilus* (Wlkr.) and *Choristoneura fractivittana* (Clem.) are not known to cause serious damage but are abundant on oak and feed with *A. semiferanus* and *C. semipurpurana*. Most leafroller larvae hatch about a week later than oak Leaftier larvae. This group of insects may also feed on other hardwoods.

Figure 5. Larva of oak leaftier, *C. semipurpurana*.

Figure 6. Last larval instar of oak leafroller, *A. semiferanus*. (Other larval instars of this species have black heads and prothoracic shields.)

Author

Parker Snowden, Entomologist
NA State and Private Forestry
Portsmouth, NH 03801